0-8186-71090-4). Claims 15-26, 38 and 39 have been rejected under 35 U.S.C. § 102(b) as

being anticipated by Saber et al. (Face Detection and Facial Feature Extraction Using Color,

Shape and Symmetry-based Cost Functions; IEEE Proceedings on Pattern Recognition, ISBN:

1015-4651). Claims 2-7, 9-14, and 32-35 have been rejected under 35 U.S.C. § 103(a) as being

unpatentable over Saber in view of Ohmi et al (U.S. 5,923,779).

In addition, claims 28 and 29 have been rejected under 35 U.S.C. § 103(a) as being

unpatentable over Nguyen in view of Hasegawa et al (Real-time Parallel and Cooperative

Recognition of Facial Images for an interactive Visual Human Interface; IEEE paper ISBN:

1054-4651). Claims 30 and 31 have been rejected under 35 U.S.C. § 103(a) as being

unpatentable over Saber in view of Ohmi and Hasegawa. Claims 36 and 37 have been rejected

under 35 U.S.C. § 103(a) as being unpatentable over Saber further in view of Ohmi and Wurtz

("Object Reconstruction Robust Under Transitions, Deformations, and Changes in Background,"

IEEE Transactions on Pattern Analysis and Machine Intelligence, ISBN: 016-8828). Applicant

submits the following in traversal of the rejections.

Rejection of claims 1, 8, 27 and 40 under § 102(b) as being anticipated by Nguyen

Claim 1 recites "implementing an extracting algorithm of a precedent stage under a

predetermined extracting condition to obtain an extraction result, changing an extracting

condition of a subsequent stage so as to be adapted to the thus obtained extraction result, and

implementing an extracting algorithm of said subsequent stage under the thus changed extracting

condition, wherein said precedent stage comprises extracting a shape of specified image subject."

In Nguyen, a silhouette is first obtained and then skin region segmentation and feature

detection are performed. Since the silhouetting relates to determinations of high and low

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contrast areas, Applicant submits that the extraction of a silhouette in the first instance is a form

of gradation comparison and not shape extraction. Various histogram analyses are carried out to

estimate skin intensity levels and feature contrast. Candidate skin regions are analyzed by size,

shape, location, orientation and the most likely candidates are grouped into the composite face-

skin region. Once the composite face-skin group has been found, analyses of size, shape,

location, orientation proceed to compute the likelihood of face orientations. The view estimate

then provides information to compute adjustment of the face ellipse location and orientation.

See Section 2.3.

Based on the foregoing, it is apparent that a extraction of a shape of a specified image

subject occurs after skin detection and dark/light silhouetting. Therefore, a precedent stage does

not comprises extracting a shape of a specified image subject as described in claim 1.

For at least the above reasons, claim 1 and its dependent claims should be deemed

patentable. Since claim 8 recites similar elements, claim 8 and its dependent claims should be

deemed patentable for the same reasons.

Claim 27

Claim 27 recites that the subsequent stage comprises detecting a color or hue of the

specified image subject. The Examiner appears to be citing the skin detection of Nguyen for

teaching a subsequent stage. However, in Nguyen, skin regions are analyzed by size, shape,

locations and orientation. See section 2.3. There is no indication that a subsequent stage

comprises detecting a color or a hue of the specified image subject.

The Examiner additionally states that section 1.3 of Nguyen teaches color-based

segmentation, however, the color-based segmentation mentioned in section 1.3 refers to a

reference Cha and not Nguyen. The color segmentation may be applied but need not be in the order described in the claim. For example, if silhouetting uses color data, the order of processes are not consecutive but are concurrent. The mere use of color does not necessarily result in the claimed apparatus or methodology.

Therefore, for at least these reasons claim 27 should be deemed patentable. Since claim 40 describes similar elements, it should be deemed patentable for the same reasons.

Rejection of claims 15-26, 38 and 39 under § 102(b) as being anticipated by Saber

Claim 15

Claim 15 recites performing image subject extraction processing by a specified image subject extracting algorithm or algorithms for each extraction area. It appears that the Examiner is stating that an extraction algorithm is applied in order to extract the face, eyes, nose and mouth of a person since that is the image subject that is extracted.

The Examiner states that the claim does not recite a plurality of extraction areas. The claim describes that image subject extraction processing is performed for *each extraction area,* and further describes N-dimensional voting of the extracted areas. In Saber, a plurality of areas of an image are extracted, including eyes, nose and mouth.

The Examiner states that since the location of the tip of the nose and center of the mouth is dependent upon location of the eyes, which is obtained by voting, then the nose and center of the mouth, which are other extraction areas, are also obtained by voting. This is speculative and appears to be incorrect. The nose and the center of the mouth are obtained according to their location in relationship to the location of the eyes. It is clear that **each** of extraction areas are **not** obtained by performing a vote in an N-dimensional space of an image characteristic quantity and

extracted by the specified image subject extracting algorithm, since the nose and center of the

mouth are obtained based on their location relationship to the eyes. Saber relies on symmetry

and relative positioning to ease the extraction process. Applying duplicative extraction and

voting for each segment is counter to the principle of operation of the reference.

Therefore, for at least these reasons, claim 15 and its dependent claims should be deemed

patentable.

Claim 16

The Examiner has not established an aggregation value in a voting space, as described in

claim 16. As previously indicated, the aspect of Saber cited by the Examiner for teaching an

aggregation value in a voting space merely measures distance from a horizontal and vertical axis

and is not based on an aggregation value. Nor does Saber determine whether an image

characteristic exceeds a predetermined value. The values t_1 and t_2 which are being cited by the

Examiner for teaching a predetermined value, are based upon a distance from the eye center and

not upon an aggregation value in a voting space. Therefore, for at least these reasons claim 16

should be deemed patentable. Since claim 17 describes similar elements, it should be deemed

patentable for the same reasons.

Furthermore, Applicant respectfully requests that the Examiner clarify his statement in

the paragraph bridging pages 3-4 of the Office Action. In particular, the Examiner states that a

voting space is not claimed. However, claim 16 recites "an extraction area in which said

aggregation value in the *voting space* of said image characteristic quantity exceeds a

predetermined value". Furthermore, there does not appear to be an inconsistency between claims

16 and 18.

Claim 19

The Examiner cites Formula 8 for teaching the weighting processing of claim 19.

Formula 8 teaches locating "holes" in the skin segmentation mask to a horizontal minor axis.

There is no indication that *weighting value lowering processing* is applied to a region within a

predetermined area on a specific characteristic axis with respect to a neighborhood of the region

in which the aggregation value becomes large in the N-dimensional characteristic stage.

Therefore, for at least this reason claim 19 should be deemed patentable.

Claim 20

Claim 20 recites that the application of the "weighting value lowering processing is

processing to remove a remarkably large size or a remarkably small size from extraction data."

As previously indicated, Formula 8 locates the closest holes in the skin segmentation mask to the

horizontal minor axis. Formula 8 is not a weighting value lowering processing, nor is a

remarkably large size or a remarkably small size from an extraction area removed.

Furthermore, the Examiner has not provided a reference in response to Applicant's

request of concrete evidence in support of the Official Notice taken by the Examiner in the

previous Office Action. Therefore, for at least these reasons claim 20 should be deemed

patentable. The Examiner's reliance on a basic statistical analysis is inappropriate. In

distinguishing facial characteristics, where each piece of data could be significant to the image,

there is simply no motivation to apply the weighting as suggested by the Examiner to iradicate

substantive values of interest.

Claim 38

Claim 38 recites that "the vote comprises an aggregation of points indicative of the specified image subject."

The Examiner asserts that the locating the centroids of the "holes" within the skin segmentation mask teaches an aggregation of points. Merely because the location of the eyes is determined, does not mean that the location is determined according to an aggregation of points. In particular, the location of the eyes are determined according to a cost function, and not an aggregation of points as claimed. Therefore, for at least this reason claim 38 should be deemed patentable. Since claim 39 describes similar elements, it should be deemed patentable for the same reason.

Rejection of claims 2-7, 9-14, and 32-35 under § 103(a) as being unpatentable over Saber in view of Ohmi

Claim 2

Claim 2 recites "a method of extracting a specified image subject which implements a plurality of specified image subject extracting algorithms in each stage of a plurality of stages by means of parallel processing, comprising managing respective extracting states of said plurality of specified image subject extracting algorithms in said each stage, qualifying respective extraction processing conditions of said plurality of specified image subject extracting algorithms in a subsequent stage according to the respective extracting states in a precedent stage, and implementing said plurality of specified image subject extracting algorithms of said subsequent stage under the thus qualified respective extraction processing conditions by means of parallel processing."

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The Examiner states that Saber does not teach parallel processing and cites Ohmi to cure

the deficiency. Ohmi teaches extracting characteristics of a face, such as outline of the face,

shape of the hair, shape of the eyes, shape of the nose and shape of the mouth which are divided

into 50 different types. The closest shape is then determined. Col. 5, line 65 to column 6, line 4.

However, there is no indication that extracting algorithms in a subsequent stage are

performed according to the extracting states in a precedent stage in the parallel processing. In

particular, it appears that all of the 50 extracted images are from the same stage. The objective

of providing an instantaneous recognition of data would teach away from the sequenced

operations as claimed.

Furthermore, the combination of Saber and Ohmi is not supportable, and significantly the

Examiner has provided no motivation for the combination. Ohmi determines a face, hair, eyes,

nose and mouth by extracting multiple possibilities as to where those features are located on an

image. In Saber, the location of nose and mouth are calculated according to a distance from a

center of the eyes. Therefore, there is no need to obtain all the possible eyes, noses and mouths

resulting in the parallel processing of Ohmi, with Saber. Therefore, for at least these reasons

claim 2 and its dependent claims should be deemed patentable. Since claim 9 describes similar

elements, claim 9 and its dependent claims should also be deemed patentable.

Claim 32

Claim 32 recites that the plurality of specified image subject extracting algorithms in

each stage of the plurality of stages are implemented at the same time. There is no indication

that algorithms applied in each of the stages of Ohmi are implemented at the same time and the

Examiner has not established otherwise. Therefore, for at least this reason claim 32 should be

deemed patentable. Since claim 33 describes similar elements, it should be deemed patentable

for the same reason.

Claim 34

Claim 34 describes that "the image subject extraction parallel processing unit comprises

skin color extraction, face contour extraction, hair-on-head extraction, eye/nose/mouth/eyebrow

extraction, body extraction, and non-background area extraction." The Examiner asserts that a

combination of Saber and Ohmi teaches the elements of claim 34. However, neither Saber nor

Ohmni disclose extracting an eyebrow, body, or non-background area. Therefore, for at least

this reason claim 34 should be deemed patentable. Since claim 35 describes similar elements, it

should be deemed patentable for the same reason.

Rejection of claims 28 and 29 under § 103(a) as being unptatentable
over Nguyen in view of Hasegawa

Claims 28 and 29 should be deemed patentable by virtue of their dependency to claims 1

and 8 for at least the reasons set forth above.

Rejection of claims 30 and 31 under § 103(a) as being unptatentable
over Saber in view of Ohmi and Hasegawa

Claims 30 and 31 should be deemed patentable by virtue of their dependency to claims 2

and 9 for at least the reasons set forth above.

Rejection of claims 36 and 37 under § 103(a) as being unptatentable
over Saber further in view of Ohmi and Wurtz

Claim 36 recites that the algorithms comprise different degrees of resolution. The

Examiner states that Saber and Ohmi do not teach the elements of claim 36 and cites Wurtz

section 2.1 and 2.2 to cure the deficiency. Section 2.1 describes extracting features according to

a 2-D Gabor function. Section 2.2 describes the sampling of a frequency space. There is no

indication that an algorithm for extracting an image subject comprises different degrees of

resolution.

Furthermore, the combination of Saber, Ohmi and Wurtz is not obvious since they teach

contrary methods of obtaining an image subject. Therefore, the combination of Saber, Ohmi and

Wurtz do not teach the elements of claim 36, for at least these reasons claim 36 should be

deemed patentable. Since claim 37 describes similar elements, it should be patentable for the

same reasons.

In view of the above, reconsideration and allowance of this application are now believed

to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is

kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue

Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any

overpayments to said Deposit Account.

Respectfully submitted,

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